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United States Patent [19][11] **Patent Number:** **5,428,062**

Ueno et al.

[45] **Date of Patent:** **Jun. 27, 1995**[54] **PROSTAGLANDINS E AND ANTI ULCERS
CONTAINING SAME**[75] **Inventors:** **Ryuzo Ueno; Ryuji Ueno**, both of
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Tomio Oda, Sanda, all of Japan[73] **Assignee:** **K.K. Ueno Seiyaku Oyo Kenkyujo**,
Osaka, Japan[21] **Appl. No.:** **53,487**[22] **Filed:** **Apr. 28, 1993****Related U.S. Application Data**[60] Division of Ser. No. 681,031, Apr. 5, 1991, Pat. No.
5,225,439, which is a continuation of Ser. No. 406,830,
Sep. 12, 1989, abandoned, which is a continuation-in-
part of Ser. No. 149,445, Jan. 28, 1988, abandoned.[30] **Foreign Application Priority Data**

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[51] **Int. Cl.⁶** **C07C 405/00; A61K 31/557**[52] **U.S. Cl.** **514/530; 514/573;**
560/121; 562/503[58] **Field of Search** 560/121; 562/503;
514/530, 513[56] **References Cited****U.S. PATENT DOCUMENTS**

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Primary Examiner—Robert Gerstl*Attorney, Agent, or Firm*—Sughrue, Mion, Zinn,
Macpeak & Seas[57] **ABSTRACT**

The novel 13,14-dihydro-15-keto prostaglandins E of the invention have remarkable preventive effects against ulcers. Further, the novel 13,14-dihydro-15-keto-prostaglandins E of the invention have an advantage that they have none of side effects which prostaglandin E intrinsically has, or can remarkably reduce such effects of the prostaglandin E.

Therefore, the novel 13,14-dihydro-15-keto prostaglandins E of the invention are effective for animal and human use for treatment and prevention of ulcers, such as duodenal ulcer and gastric ulcer.

7 Claims, 57 Drawing Sheets